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Abrasive dehulling of Quinoa (Chenopodium quinoa): effect on saponin content as determined by an adapted hemolytic assay.
CECHAF. Reichert, R.D. ; Tatarynovich, J.T.~Tyler, R.T. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Nov/Dec 1986. v. 63 (6). p. 471-475. Includes references. (NAL Call No.: DNAL 59.8 C33).

0002
Absorption of zinc and iron by rats fed meals containing sorghum food products.
Stuart, M.A. ; Johnson, P.E.~Hamaker, B.~Kirleis, A. London, Eng. : Academic Press. Journal of cereal science. July 1987. v. 6 (1). p. 81-90. Includes references. (NAL Call No.: DNAL TX393.J6).

0003
Alkylresorcinols in cereal grains--nutritional importance and methods of analysis.
LBWTA. Lorenz, K. ; Hengtrakul, P. London : Academic Press. Lebensmittel - Wissenschaft + Technologie = Food science + technology. 1990. v. 23 (3). p. 208-215. Includes references. (NAL Call No.: DNAL TP368.L4).

0004
Amaranth--a potential crop for southwestern Mississippi.
RRMSD. Igbokwe, P.E. ; Tiwari, S.C.~Collins, J.B.~Tartt, J.B.~Russell, L.C. Mississippi State, Miss. : The Station. Research report - Mississippi Agricultural and Forestry Experiment Station. Nov 1988. v. 13 (10). 4 p. ill. Includes references. (NAL Call No.: DNAL S79.E37).

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Amaranth: the once and future crop--after four conturies of obscurity, a former Aztec crop offers modern farmers a promising alternative.
BISNA. Tucker, J.B. Arlington, Va. : The Institute. BioScience - American Institute of Biological Sciences. Jan 1986. v. 36 (1). p. 9-13. ill. (NAL Call No.: DNAL 500 AM322A).

0006
Amaranths for food or feed, January 1979-December 1989.
Gates, J.P. Beltsville, Md. : The Library. Quick bibliography series - U.S. Department of Agriculure, National Agricultural Library (U.S.). Updates QB 88-07.~ Bibliography. Feb 1990. (90-29). 23 p. (NAL Call No.: DNAL aZ5071 N3).

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Amaranthus for food or feed, 1979-May 1987.
MacLean, J.T. Beltsville, Md. : The Library. Quick bibliography series - National Agricultural Library (U.S.). Updates QB 81-01.~ Bibliography. Oct 1987. (88-07). 12 p. (NAL Call No.: DNAL aZ5071.N3).

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Amaranthus hypochondriacus: starch isolation and partial characterization.
CECHAF. Yanez, G.A. ; Messinger, J.K.~Walker, C.E.~Rupnow, J.H. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. May/June 1986. v. 63 (3). p. 273-276. Includes references. (NAL Call No.: DNAL 59.8 C33).

0009
Associative effects of sorghum silage and sorghum grain diets.
JANSAG. Hart, S.P. Champaign, Ill. : American Society of Animal Science. Journal of animal science. June 1987. v. 64 (6). p. 1779-1789. Includes references. (NAL Call No.: DNAL 49 J82).

0010
Beneficial role of corn leaf aphid, Rhopalosiphum maidis (Fitch) (Homoptera: Aphididae), in maintaining Hippodamia spp. (Coleoptera: coccinellidae) in grain sorghum.
CRPTD6. Kring, T.J. ; Gilstrap, F.E. Guildford, Eng. : Butterworths. Crop protection. Apr 1986. v. 5 (2). p. 125-128. Includes references. (NAL Call No.: DNAL SB599.C8).

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Characterization of colored-grain sorghum lines and identification of high-tannin lines with good dehulling characteristics.
CECHAF. Reichert, R.D. ; Mwasaru, M.A.~Mukuru, S.Z. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. May/June 1988. v. 65 (3). p. 165-170. Includes references. (NAL Call No.: DNAL 59.8 C33).

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Combating famine by grain storage in western Sudan.
GEOJDQ. Ibrahim, F.N. Dordrecht : D. Reidel Publishing Company. GeoJournal. Jan 1987. v. 14 (1). p. 29-35. ill. Includes references. (NAL Call No.: DNAL QE1.G38).

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Composition of the seeds of some Amaranthus species.
JSFAA. Singhal, R.S. ; Kulkarni, P.R. London : Elsevier Applied Publishers. Journal of the science of food and agriculture. 1988. v. 42 (4). p. 325-331. Includes references. (NAL Call No.: DNAL 382 SO12).

0014
The contribution of minerals, trace elements, phytin, starch and amino acids to the nutritional quality of sorghum beer.
SAJSA. Van Heerden, I.V. ; Taylor, J.R.N.~Glennie, C.W. Johannesburg : South African Association for the Advancement of Science. South African journal of science. Jan 1987. v. 83 (1). p. 5-7. Includes references. (NAL Call No.: DNAL 515 SO84).

0015
Damage potential of earhead bug on sorghum panicle.
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0016
Description of a production model of the tangential abrasive dehulling device and its application to breeders' samples.
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0017
Destruction of microorganisms and deformation of plastic jars by hot sorghum syrup.
JFQUD. Collins, J.L. ; Draughon, F.A.~McCarty, I.E. Trumbull, Conn. : Food & Nutrition Press. Journal of food quality. 1989. v. 11 (6). p. 433-441. Includes references. (NAL Call No.: DNAL TP373.5.J6).

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Development of an enzymatic procedure to produce high-protein amaranth flour.
BILED3. Barba de la Rosa, A.P. ; Paredes-Lopez, O. Surrey : Science and Technology Letters. Biotechnology letters. June 1989. v. 11 (6). p. 417-422. Includes references. (NAL Call No.: DNAL QR53.B56).

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Development of weaning food formulations based on malting and roller drying of sorghum and cowpea.
JFOTA. Malleshi, N.G. ; Daodu, M.A.~Chandrasekhar, A. Oxford : Blackwell Scientific Publications. International journal of food science and technology. Oct 1989. v. 24 (5). p. 511-519. Includes references. (NAL Call No.: DNAL TP368.J6).

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Dextrins in sorghum beer.
JINBA. Glennie, C.W. ; Wight, A.W. London : The Institute. Journal of the Institute of Brewing. July/Aug 1986. v. 92 (4). p. 384-386. Includes references. (NAL Call No.: DNAL 390.9 IN7).

0021
Digestibility and nutritional value of crude oil from three amaranth species.
JJASDH. Garcia, L.A. ; Alfaro, M.A.~Bressani, R. Champaign, Ill. : The Society. Journal of the American Oil Chemists' Society. Mar 1987. v. 64 (3). p. 371-375. Includes references. (NAL Call No.: DNAL 307.8 J82).

0022
Digestibility and utilization of protein and energy from Nasha, a traditional Sudanese fermented sorghum weaning food.
JONUA. Graham, G.G. ; MacLean, W.C. Jr.~Morales, E.~Hamaker, B.R.~Kirleis, A.W.~Mertz, E.T.~Axtell, J.D. Bethesda, Md. : American Institute of Nutrition. The Journal of nutrition. June 1986. v. 116 (6). p. 978-984. charts. Includes 10 references. (NAL Call No.: DNAL 389.8 J82).
Abstract: Two varieties of sorghum were blended into Nasha, a traditional Sudanese food. The Nasha was cooked and fed to convalescing malnourished infants and small children. Two casein-based control diets were fed to the subjects prior to and following the test diet period. Both casein diets had significantly greater nitrogen retentions than the Nasha diet. The casein-1 diet resulted in lower fecal wet and dry weights than both the Nasha and casein-2 diets. Both casein diets were lower in fecal energy and carbohydrate than the Nasha diet.(Isp)

0023
Digestibility and utilization of protein and energy from Nasha, a traditional Sudanese fermented sorghum weaning food.
JONUA. Graham, G.G. ; MacLean, W.C. Jr.~Morales, E.~Hamaker, B.R.~Kirleis, A.W.~Mertz, E.T.~Axtell, J.D. Bethesda, Md. : American Institute of Nutrition. The Journal of nutrition. June 1986. v. 116 (6). p. 978-984. Includes 10 references. (NAL Call No.: DNAL 389.8 J82).

0024
Digestion kinetics and cell wall composition of brown midrib sorghum X sudangrass morphological components.
CRPSAY. Fritz, J.O. ; Moore, K.J.~Jaster, E.H. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1990. v. 30 (1). p. 213-219. Includes references. (NAL Call No.: DNAL 64.8 C883).
Microbial degradation of plant fiber is an important factor limiting the utilization of forages by ruminant animals. The objectives of this study were to determine the composition and rate and extent of digestion of cell walls of normal and brown midrib (bmr) genotypes of two sorghum X sudangrass Sorghum bicolor (L.) Moench hybrids and to assess the relationship between cell wall composition and digestibility. Plants, harvested at three stages of maturity, were separated into leaf blades, leaf sheaths, and stems and analyzed for fiber constituents, structural carbohydrates, and alkali-labile phenolic composition. Fiber digestion kinetics were determined utilizing in vitro batch cultures. Brown midrib genotypes were lower (P less than 0.05) in neutral detergent fiber (NDF) and acid detergent lignin concentrations than normal genotypes. Leaf components had a greater (P less than 0.05) NDF concentration than stems; however, leaf cell walls were much less lignified than stem cell walls. There were no

differences between genotypes (P greater than 0.05) in neutral sugar composition or in the xylose to arabinose (X:A) ratio. Morphological components varied in the concentration of all neutral sugars, except mannose, and in the X:A ratio. Brown midrib genotypes had a significantly lower trans-p-coumaric acid concentration and a p-coumaric acid to ferulic acid ratio than normal genotypes. There was no difference (P greater than 0.05) between genotypes in the rate of NDF digestion, which averaged 0.0413 and 0.0395 h-1 for bmr and normal genotypes, respectively; however, bmr genotypes had a greater (P less than 0.05) 72 h extent of NDF digestion when compared to normal genotypes. The results of this study indicate that the p-coumaric acid concentration and the linear xylan content are important factors limiting the rate and extent of cell wall digestion.

0025
Dry matter yield and nutritive value of four summer annual crops in north-west Spain (Galicia).
GSFCD. Lloveras, J. Oxford : Blackwell Scientific Publications. Grass and forage science : the journal of the British Grassland Society. Sept 1990. v. 45 (3). p. 243-248. Includes references. (NAL Call No.: DNAL 60.19 B773).

0026
Effect of cooking, pH and polyphenol level on carbohydrate composition and nutritional quality of a sorghum (Sorghum bicolor (L.) Moench) food, ugali.
BJNUAV. Bach Knudsen, K.E. ; Munck, L.~Eggum, B.O. Cambridge : Cambridge University Press. The British journal of nutrition. Jan 1988. v. 59 (1). p. 31-47. ill., charts. Includes 46 references. (NAL Call No.: DNAL 389.8 B773).
Extract: The present work was undertaken to study the effects of cooking, pH and polyphenol level on carbohydrate composition and nutritional quality of sorghum (Sorghum bicolor (L.) Moench). Three different sorghum varieties; Dabar, Feterita and Argentine containing zero, intermediate to low and high levels of polyphenols respectively were used in the study. From these varieties uncooked, uncooked acidified, cooked, and cooked acidified diets were prepared. Diets were characterized with regard to resistant starch (RS), dietary fibre (DF), acid-detergent fibre (ADF) and amino acid content. Raw materials were further analysed for content and composition of non-starch polysaccharides and Klason lignnin. The nutritional properties were studied in balance trials with rats. True protein digestibility (TD), biological value (BV), net protein utilization, digestible amino acids, digestible energy (DE) and digestible DF were used as criteria in the nutritional study. Cooking at neutral and acid pH resulted in significantly higher assayed values for DF. Increase in DF could be accounted for by formation of RS. Approximately 50% of RS was recovered in the faeces. In vitro values for protein associated with ADF and in vivo balance values using rats suggest that an endosperm protein fraction, kafirins, was made unavailable during cooking. This resulted in reduced TD and increased BV. It is assumed that unavailable kafirins serve as a nitrogen source for microflora in the hind-gut. Dietary polyphenols changed the excretory route for N from urine to faeces. This resulted in lower TD and higher BV in Argentine (high in polyphenols) than in Dabar and Feterita (low in polyphenols), although dietary lysine (first limiting amino acid) was the same in the three varieties. Variation in DE of the diets was attributed to DF, RS and the amount of faecal protein, which in turn were influenced by undigested kafirins and polyphenols.(author)

0027
Effect of cultivar, steeping, and malting on tannin, total polyphenol, and cyanide content of Nigerian sorghum.
CECHAF. Osuntogun, B.A. ; Adewusi, S.R.A.~Ogundiwin, J.O.~Nwasike, C.C. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Mar/Apr 1989. v. 66 (2). p. 87-89. Includes references. (NAL Call No.: DNAL 59.8 C33).

0028
Effect of local food processing on phytate levels in cassava, cocoyam, yam, maize, sorghum, rice, cowpea, and soyean.
JAFCAU. Marfo, E.K. ; Simpson, B.K.~Idowu, J.S.~Oke, O.L. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July 1990. v. 38 (7). p. 1580-1585. Includes references (NAL Call No.: DNAL 381 J8223).

0029
Effect of sodium lauryl sulfate in solubilizing protein for tryptophan determination.
JFBID. Clemente, E. ; De Borja Portela, F. Westport, Conn. : Food and Nutrition Press. Journal of food biochemistry. Mar 1988. v. 12 (1). p. 61-68. Includes references. (NAL Call No.: DNAL TX545.J6).

0030
Effect of soybean and sesame addition on the nutritional value of maize and decorticated sorghum tortillas produced by extrusion cooking.
CECHAF. Serna-Saldivar, S.O. ; Canett, R.~Vargas, J.~Gonzalez, M.~Bedolla, S.~Medina, C. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Correction for Serna-Saldivar, S.O.; Canett, R.; Vargas, J.; Gonzalez, M.; Bedolla, S.; Medina, C.; Effect of soybean and sesame addition on the nutritional value of maize and decorticated sorghum tortillas produced by extrusion cooking, Journal of Dairy Research, Jan/Feb 1988, v. 65

(1) p. 44-48. Jan/Feb 1988. v. 65 (1). p. 44-48. Includes references. (NAL Call No.: DNAL 59.8 C33).

0031
Effect of soybean and sesame addition on the nutritional value of maize and decorticated sorghum tortillas produced by extrusion cooking.
JDRSAN. Serna-Saldivar, S.O. ; Canett, R.~Vargas, J.~Gonzalez, M.~Bedolla, S.~Medina, C. Cambridge : Cambridge University Press. Journal of dairy research. Jan/Feb 1988. v. 65 (1). p. 44-48. Includes references. (NAL Call No.: DNAL 44.8 J823).

0032
Effects of agricultural practices, handling, processing, and storage on cereals.
Wu, Y.V. ; Inglett, G.E. New York : Van Nostrand Reinhold, c1988. Nutritional evaluation of food processing / edited by Endel Karmas, Robert S. Harris. Literature review. p. 101-118. charts. Includes 67 references. (NAL Call No.: DNAL TX551.H3 1988).
Abstract: A technical report discusses the effects of agricultural practices and food processing and storage conditions on the nutrient composition and nutritional value of specific cereals. Technical information and data are discussed for wheat, corn, rice, oats, barley, sorghum, and triticale, and their products. Specific processing techniques and their effects on nutrient density are discussed.

0033
Efficient methods of grain analysis. Russian.
SSMNA. Vasilenko, P.N. Moskva : "Agropromizdat". Selektsiia i semenovodstvo. July/Aug 1986. (4). p. 22-25. ill. (NAL Call No.: DNAL 61.9 SE5).

0034
Essential amino acid composition and in vitro digestibility of protein of sorghum bread "kisra" enriched with edible defatted groundnut flour.
NURIB. Ahmed, A.H.R. ; Ramanatham, G. Los Altos, Calif. : Geron-X, Inc. Nutrition reports international. Mar 1987. v. 35 (3). p. 487-495. Includes references. (NAL Call No.: DNAL RC620.A1N8).

0035
Evaluation of whole amaranth (Amaranthus cruentus) flour, its air-classified fractions, and blends of these with wheat and oats as possible components for infant formulas.
JFDAZ. Sanchez-Marroquin, A. ; Del Valle, F.R.~Escobedo, M.~Avitia, R.~Maya, S.~Vega, M. Chicago, Ill. : Institute of Food Technologists. Journal of food science. Sept/Oct 1986. v. 51 (5). p. 1231-1234, 1238. Includes references. (NAL Call No.: DNAL 389.8 F7322).

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Expression-mill rolls compared using different feedstocks.
TAAEA. Monroe, G.E. ; Bryan, W.L. St. Joseph, Mich. : The Society. Transactions of the ASAE - American Society of Agricultural Engineers. Mar/Apr 1986. v. 29 (2). p. 616-617, 620. Includes 9 references. (NAL Call No.: DNAL 290.9 AM32T).

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Extraction and refining of oil from amaranth seed.
JJASDH. Lyon, C.K. ; Becker, R. Champaign, Ill. : The Society. Journal of the American Oil Chemists' Society. Feb 1987. v. 64 (2). p. 233-236. Includes references. (NAL Call No.: DNAL 307.8 J82).

0038
Extrusion of sorghum and sorghum peanut mixtures: effect of barrel temperature and feed moisture on physical-textural characteristics.
JTXSB. Phillips, R.D. ; Falcone, R.G. Trumbull, Conn. : Food & Nutrition Press. Journal of texture studies. 1988. v. 19 (2). p. 185-197. Includes references. (NAL Call No.: DNAL TP156.R45J6).

0039
Factors affecting quality of sorghum T delta, a thick porridge.
CECHAF. Bello, A.B. ; Rooney, L.W.~Waniska, R.D. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Jan/Feb 1990. v. 67 (1). p. 20-25. Includes references. (NAL Call No.: DNAL 59.8 C33).

0040
Factors affecting the abrasive dehulling efficiency of high-tannin sorghum.
CECHAF. Mwasaru, M.A. ; Reichert, R.D.~Mukuru, S.Z. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. May/June 1988. v. 65 (3). p. 171-174. Includes references. (NAL Call No.: DNAL 59.8 C33).

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Fiber, nitrate, and protein content of Amaranthus accessions as affected by soil nitrogen application and harvest date.
HJHSA. Walters, R.D. ; Coffey, D.L.~Sams, C.E. Alexandria, Va. : American Society for Horticultural Science. HortScience. Apr 1988. v. 23 (2). p. 338-341. Includes references. (NAL Call No.: DNAL SB1.H6).

0042
Food selection by larvae of Heliothis armigera (Hubner) Lepidoptera: Noctuidae) on grain sorghum.
AESJB. Teakle, R.E. ; Byrne, V.S. Indooroopilly : The Society. Journal of the Australian Entomological Society. 1988. v. 27 (pt.4). p. 293-296. ill. Includes references. (NAL Call No.: DNAL 420 EN823).

0043
Genetic variation of storage proteins in sorghum grain: studies by isoelectric focusing and high-performance liquid chromatography.
CECHAF. Sastry, L.V.S. ; Paulis, J.W.~Bietz, J.A.~Wall, J.S. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Sept/Oct 1986. v. 63 (5). p. 420-427. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

0044
Germinated quinoa flour to reduce the viscosity of starchy foods.
CECHAF. Atwell, W.A. ; Hyldon, R.G.~Godfrey, P.D.~Galle, E.L.~Sperber, W.H.~Pedersen, D.C.~Evans, W.D.~Rabe, G.D. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Nov/Dec 1988. v. 65 (6). p. 508-509. Includes references. (NAL Call No.: DNAL 59.8 C33).

0045
Germination of amaranth seeds: effects on nutrient composition and color.
JFDAZ. Paredes-Lopez, O. ; Mora-Escobedo, R. Chicago, Ill. : The Institute. Journal of food science : an official publication of the Institute of Food Technologists. May/June 1989. v. 54 (3). p. 761-762. Includes references. (NAL Call No.: DNAL 389.8 F7322).
Amaranth seeds were germinated at a water activity of about 0.92 for up to 72 hr. Crude protein, true protein and crude fiber were found to increase and fat content to decrease. For 48 hr of germination reactive lysine values did not change. At 72 hr, a slight decrease was observed in lysine and in vitro protein digestibility was similar to the control. During germination Hunter color parameters L were lowered and a and b were enhanced. Germinated seeds showed a pinky color which appeared very attractive for various food uses.

0046
Gluten intolerance: Chemistry, celiac-toxicity, and detection of prolamins in foods.
CFWOD. Skerritt, J.H. ; Devery, J.M.~Hill, A.S. St. Paul, Minn. : American Association of Cereal Chemists. Cereal foods world. July 1990. v. 35 (7). p. 638-639, 641-643. ill., charts. Includes 7 references. (NAL Call No.: DNAL 59.8 C333).
Abstract: To more than 99% of the populations in the U.S. and Western countries, cereals, especially wheat, are an important and major-component of the diet, providing complex carbohydrate, fiber, and protein. The ever-increasing variety of forms into which wheat flours are processed--including breads, noodles, pasta, bagels, muffins, crumpets, cookies, and crackers--also adds variety and interest to the modern diet. However, a significant number of adults and children cannot tolerate several cereals--wheat, rye, triticale, barley, and possibly oats--in their diets.

0047
Growth, liver composition, and calcium balance of rats fed sorghum supplemented with two levels of beans.
QPMVA. Obizoba, I.C. Dordrecht : Martinus Nijhoff/W. Junk Publishers. Qualitas plantarum = Plant foods for human nutrition. 1987. v. 37 (3). p. 193-200. Includes references. (NAL Call No.: DNAL 64.8 M41).

0048
Headspace volatiles and sensory characteristics of ground beef from forage- and grain-fed heifers.
JFDAZ. Larick, D.K. ; Turner, B.E. Chicago, Ill. : The Institute. Journal of food science : an official publication of the Institute of Food Technologists. May/June 1990. v. 55 (3). p. 649-654. Includes references. (NAL Call No.: DNAL 389.8 F7322).
Twenty-seven yearling Hereford-Angus heifers were allotted to one of three intense managed pasture systems: Tifleaf pearl millet, sorghum sudangrass and fescue-clover. After grazing, heifers were finished in drylot and then serially slaughtered at 0, 52, and 82 days in the feedlot (DIF). A total of 51 volatiles were identified in ground beef from Longissimus dorsi (L. dorsi) muscle and subcutaneous fat. Major classes of volatile compounds identified included hydrocarbons and aldehydes plus fewer numbers of ketones, alcohols, aromatic compounds and sulfur-containing compounds. The majority of compounds which varied due to DIF were alkanals and alk-2-enals. The concentration of each of the volatiles which varied due to DIF was found to increase. None of the volatiles quantitated were positively correlated with sweetness or gamey aftertaste, the two characteristics which were highest for the 0 DIF cattle.

0049
Importance of cereal phytase activity for phytate phosphorus utilization by growing pigs fed diets containing triticale or corn.
JONUA. Pointillart, A. ; Fourdin, A.~Fontaine, N. Bethesda, Md. : American Institute of Nutrition. The Journal of nutrition. May 1987. v. 117 (5). p. 907-913. Includes references. (NAL Call No.: DNAL 389.8 J82).

0050
Influence of dietary fat and protein level on milk production, milk composition and ration digestibility.
NURIB. Nianogo, A.J. ; Amos, H.E. Stoneham, Mass. : Butterworth. Nutrition reports international. July 1989. v. 40 (1). p. 129-137. Includes references. (NAL Call No.: DNAL RC620.A1N8).
Sixteen multiparous (M) and eight primiparous (P) Holstein cows 30 to 60 days in lactation were blocked into 4 balanced groups of 6 cows based on milk yield for a 56-day study. The groups were randomly assigned to 1 of 4 dietary treatments to determine the effect of protein level in diets containing added lipids on intake, digestion, milk yield,

milk composition and body weight changes. Treatments were: A) control plus .45 kg corn/d; B) control + .45 kg soybean meal (SBM)/d; C) control + .45 kg corn/d + 4% fat; D) control + .45 kg/day SMB plus 4% fat. Sorghum (Sorghum bicolor L.) silage provided the roughage. Dry matter intake (DMI) was not affected by fat or protein addition. However, DMI was higher for M than for P cows and silage intake was lower for cows receiving fat. Cows fed 4% fat produced more milk and tended to produce more milk fat than cows fed diets without fat. Cows fed D gained more weight than cows fed B or C. Dietary fat increased crude protein and gross energy digestibility. In this study fat did not alter DMI or milk CP concentration. Feeding dietary fat and supplemental protein together contributed to higher weight gains while maintaining production.

0051
Influence of protein on starch gelatinization in sorghum.
CECHAF. Chandrashekar, A. ; Kirleis, A.W. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Nov/Dec 1988. v. 65 (6). p. 457-462. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

0052
Influence of sample dividing method on forage quality as determined by NIRS.
AGJOAT. Hall, M.H. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1990. v. 82 (1). p. 164-166. Includes references. (NAL Call No.: DNAL 4 AM34P).
Forage samples collected in the field are normally dried, coarsely ground, and subdivided to minimize time and expense required for secondary grinding, facilitate ease of sample handling, and reduce space needed for sample storage. The objective of this research was to determine the efficacy of four sample dividing methods to produce uniform subsamples for near infrared reflectance spectroscopy (NIRS) analysis. Sample dividing methods were: (1) quarter sectioning with a straight edge, (2) use of a gravimetric dividing apparatus, (3) mixing in a blender then dividing by quarter sectioning, and (4) mixing in a blender and dividing with a gravimetric dividing apparatus. Dividing method efficacy was evaluated by comparison of subsample quality. Average coefficients of correlation (r) between subsamples obtained using the divider apparatus were 0.97 and 0.98 for crude protein (CP) and acid detergent fiber (ADF), respectively. These r values were 4 and 6% higher for CP and ADF, respectively, than those obtained using the quarter sectioning method. However, r of the quarter sectioning method averaged for both CP and ADF improved nearly 7% by mixing the sample before dividing. The gravimetric dividing apparatus was superior to the quarter sectioning method in uniformly dividing both mixed and unmixed forage samples.

0053
Laboratory preparation of ready-to-eat breakfast flakes from grain sorghum flour.
CECHAF. Lu, S. ; Walker, C.E. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. July/Aug 1988. v. 65 (4). p. 377-379. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

0054
LC determination of phytic acid in food by postcolumn colorimetric detection.
JAFCAU. Cilliers, J.J.L. ; Niekerk, P.J. van. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1986. v. 34 (4). p. 680-683. Includes references. (NAL Call No.: DNAL 381 J8223).

0055
Limiting amino acids in raw and processed amaranth grain protein from biological tests.
Bressani, R. ; Elias, L.G.-Garcia-Soto, A. Dordrecht : Kluwer Academic. Plant foods for human nutrition. Sept 1989. v. 39 (3). p. 223-234. Includes references. (NAL Call No.: DNAL TX341.P53).

0056
Measuring density and porosity of grain kernels using a gas pycnometer.
CECHAF. Chang, C.S. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Correction for Chang, C.S., Measuring density and porosity of grain kernels using a gas pycnometer, Journal of Dairy Research, Jan/Feb 1988, v. 65 (1) p. 13-15. Jan/Feb 1988. v. 65 (1). p. 13-15. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

0057
Measuring density and porosity of grain kernels using a gas pycnometer.
JDRSAN. Chang, C.S. Cambridge : Cambridge University Press. Journal of dairy research. Jan/Feb 1988. v. 65 (1). p. 13-15. ill. Includes references. (NAL Call No.: DNAL 44.8 J823).

0058
Mineral contents of Nigerian grains and baby foods.
JSFAA. Olaofe, O. London : Elsevier Applied Publishers. Journal of the science of food and agriculture. 1988. v. 45 (2). p. 191-194. Includes references. (NAL Call No.: DNAL 382 S012).
Maize (Zea mays), sorghum (Sorghum vulgare), cowpea (Vigna unguiculata Walp) and soya beans (Glycine max) are available locally in Nigeria. Their suitability for use in the preparation of baby foods was assessed by comparing their content of a range of minerals with that of a number of imported baby foods. The iron content of the baby foods ranged between 57 and 82 micrograms g-1, which was similar to the range in the foodstuffs, 49 to 201 micrograms g-1. Calcium, however, was much lower in the foodstuffs, 22-1300 compared with the baby foods, 4100-8600

micrograms g-1.

0059
Natural occurrence of Fusarium toxins in peanut, sorghum and maize from Mysore (India).
JSFAA. Bhavanishankar, T.N. ; Shantha, T. London : Elsevier Applied Publishers. Journal of the science of food and agriculture. 1987. v. 40 (4). p. 327-332. Includes references. (NAL Call No.: DNAL 382 SO12).

0060
The new old grains.
Barrett, M. New York, N.Y. : Vegetarian Life & Times. Vegetarian times. Jan 1986. (101). p. 28-31, 51. ill. (NAL Call No.: DNAL TX392.A1V44).
Abstract: Grains, historically a worldwide staple, are once again gaining popularity as essential to a healthy diet. Some whole grains, in fact, are becoming quite chic and turning up in trendy gourmet shops. Amaranth, quinoa, blue corn and exotic rices are being prized for their textures, unique flavors and superior nutritional quality in the grain family. Another more familiar grain, buckwheat, is being revived as a versatile breakfast food. In addition to taste and other desirable features, most of the grains can be cultivated in sparse areas; preserving diversity of the vegetable kingdom is necessary for preserving plant proteins to sustain a world without hunger.(jd-b)

0061
Nutrient composition and digestibility of ryegrass, triticale and alfalfa haylages and grain sorghum and corn silage, 1988.
McCormick, M. ; Morgan, E.B.~Nelson, B.D.~Barber, B. Baton Rouge? , La. : The Station. Annual progress report - Southeast Research Station, Louisiana Agricultural Experiment Station. 1988. p. 164-169. Includes references. (NAL Call No.: DNAL S67.E22).

0062
Nutrient content of sorghum beer strainings.
SAJAC9. Van Heerden, I.V. Pretoria : Bureau for Scientific Publications. South African journal of animal science = Suid-Afrikaanse tydskrif vir veekunde. Dec 1987. v. 17 (4). p. 171-175. Includes references. (NAL Call No.: DNAL SF1.S6).

0063
Nutrient contents and antinutritional factors in conventional and non-conventional leafy vegetables.
FDCHD. Gupta, K. ; Barat, G.K.~Wagle, D.S.~Chawla, H.K.L. Essex : Elsevier Applied Science Publishers. Food chemistry. 1989. v. 31 (2). p. 105-116. charts. Includes 41 references. (NAL Call No.: DNAL TX501.F6).
Abstract: The nutritional value and antinutritional factors of some selected Indian green leafy vegetables were determined. These vegetables were amaranth, colocasia, drumstick, fenugreek, neem and pumpkin. The vegetables were analyzed for protein and mineral content and for several antinutritional factors, including phytate/oxalate, nitrate, phenols, saponins and trypsin inhibitors.

0064
Nutrition and oesophageal cancer.
Sagar, P.M. ; Ellwood, R.W.~Rose, E.F. Boston, Mass. : Little, Brown and Company. The Lancet. May 16, 1987. v. 1 (8542). p. 1143. Includes 6 references. (NAL Call No.: DNAL 448.8 L22).
Abstract: Two letters to the editor critique an earlier such letter that summarized an hypothesis linking tannin with esophageal cancer (EC). The first of these 2 letters argues that the earlier letter misinterpreted reported observations of EC in Transkei, noting that indigenous tobacco and beer consumption appear to be implicated in the etiology EC, not vitamin and trace element deficiencies. The 2nd letter cites false assumptions in the earlier letter, noting a consistent correlation between EC and diet and the soil on which crops are grown. It is further argued that the etiology of EC involves a complicated array of factors, and that a diet rich in quality protein, vitamins, and minerals protect against EC. Both of the 2 letters argue that maize, not sorghum (containing tannin), predominantly was used for brewing beer.(wz)

0065
Nutritional and functional characteristics of extrusion-cooked amaranth flour.
CECHAF. Mendoza M. C. ; Bressani, R. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. July/Aug 1987. v. 64 (4). p. 218-222. Includes references. (NAL Call No.: DNAL 59.8 C33).

0066
Nutritional quality and technological value of triticale.
Khan, M.A. ; Rashid, J. Kuala Lumpur : Asean Food Handling Bureau. ASEAN food journal. Mar 1987. v. 3 (1). p. 17-20. Includes references. (NAL Call No.: DNAL TX341.A74).

0067
Nutritional value for young children of grain amaranth and maize-amaranth mixtures: effect of processing.
JONUA. Morales, E. ; Lembcke, J.~Graham, G.G. Bethesda, Md. : American Institute of Nutrition. The Journal of nutrition. Jan 1988. v. 118 (1). p. 78-85. charts. Includes 20 references. (NAL Call No.: DNAL 389.8 J82).
Abstract: A study assessed the nutritional value of amaranth as toasted flour, popped grain, or flakes in maize-amaranth diets fed to 9 male infants and young children. Fecal weight, and energy, fat, and carbohydrate intakes were higher than with a casein control diet, while nitrogen absorption and retention was slightly lower. No significant differences in fecal loss, nitrogen

balance, body weight gain, or serum albumin level were found between the types of amaranth, and no signs of intolerance with the diets were noted.(wz)

0068
The nutritive value of amaranth grain (Amaranthus caudatus). 1. Protein and minerals of raw and processed grain.
QPMVA. Pedersen, B. ; Kalinowski, L.S.~Eggum, B.O. Dordrecht : Martinus Nijhoff/W. Junk Publishers. Qualitas plantarum = Plant foods for human nutrition. 1987. v. 36 (4). p. 309-324. Includes references. (NAL Call No.: DNAL 64.8 M41).

0069
The nutritive value of amaranth grain (Amaranthus caudatus). 2. As a supplement to cereals.
QPMVA. Pedersen, B. ; Hallgren, L.~Hansen, I.~Eggum, B.O. Dordrecht : Martinus Nijhoff/W. Junk Publishers. Qualitas plantarum = Plant foods for human nutrition. 1987. v. 36 (4). p. 325-334. Includes references. (NAL Call No.: DNAL 64.8 M41).

0070
The nutritive value of amaranth grain (Amaranthus caudatus). 3. Energy and fibre of raw and processed grain.
Pedersen, B. ; Knudsen, K.E.B.~Eggum, B.O. Dordrecht : Kluwer Academic. Plant foods for human nutrition. Jan 1990. v. 40 (1). p. 61-71. Includes references. (NAL Call No.: DNAL TX341.P53).

0071
Nutritive value of malted, dry- or wet-milled sorghum and corn.
CECHAF. Obizoba, I.C. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Nov/Dec 1988. v. 65 (6). p. 447-449. Includes references. (NAL Call No.: DNAL 59.8 C33).

0072
Phenolics, fiber, and fiber digestibility in bird resistant and non bird resistant sorghum grain.
JAFCAU. Reed, J.D. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1987. v. 35 (4). p. 461-464. Includes references. (NAL Call No.: DNAL 381 J8223).

0073
Phenolics, fibre and fibre digestibility in the crop residue from bird resistant and non-bird resistant sorghum varieties.
JSFAA. Reed, J.D. ; Tedla, A.~Kebede, Y. London : Elsevier Applied Science Publishers. Journal of the science of food and agriculture. 1987. v. 39 (2). p. 113-121. Includes references. (NAL Call No.: DNAL 382 S012).

0074
The potential contribution of improved sorghum processing to improved food security in Lesotho an assessment and proposal /Diana Gibbs.
Gibbs, Diana. Harare Zimbabwe : Post Production Food Industry Advisory Unit, SADCC, 1987 . Cover title.~ "August 1987.". 37 p. ; 29 cm. Includes bibliographical references. (NAL Call No.: DNAL HD9049.S6L45).

0075
The potential of leaf vegetables in Nigeria.
OUAGA. Lucas, E.O. Oxford : Pergamon Press. Outlook on agriculture. 1988. v. 17 (4). p. 163-168. ill. Includes references. (NAL Call No.: DNAL 10 OU8).

0076
Preparation, composition, and nutritional implications of amaranth seed oil.
CFWOD. Becker, R. St. Paul, Minn. : American Association of Cereal Chemists. Cereal foods world. Nov 1989. v. 34 (11). p. 950-953. charts. Includes 36 references. (NAL Call No.: DNAL 59.8 C333).
Abstract: Amaranth is a dicotyledonous pseudo-cereal which has been identified as a new crop with potential for increased commercial application. Current food application include breakfast cereals, bakery products and extruded foods. This article describes the physical and chemical properties of the amaranth seed, the technology of seed oil preparation, and the nutrient composition of the amaranth grain and oil. The proximate composition, vitamin content, mineral content and the fatty acid composition of the amaranth grain and oil are compared to that for other grains.

0077
Production of tortilla chips from sorghum and maize.
Serna-Saldivar, S.O. ; Tellez-Giron, A.~Rooney, L.W. London : Academic Press. Journal of cereal science. Nov 1988. v. 8 (3). p. 275-284. Includes references. (NAL Call No.: DNAL TX393.J6).

0078
The protein compositions of the different anatomical parts of sorghum grain.
Taylor, J.R.N. ; Schussler, L. London, Eng. : Academic Press. Journal of cereal science. Oct 1986. v. 4 (4). p. 361-369. ill. Includes references. (NAL Call No.: DNAL TX393.J6).

0079
The proteins of grain amaranth.
FRINEL. Bressani, R. New York, N.Y. : Marcel Dekker. Food reviews international. Literature review. 1989. v. 5 (1). p. 13-38. Includes references. (NAL Call No.: DNAL TX341.F662).

0080
Quality analysis of summer-annual forages. I. Sample preparation methods and chemical characterization of forage types and cultivars.
AGJOAT. Fisher, D.S. ; Burns, J.C. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1987. v. 79 (2). p. 236-242. Includes references. (NAL Call No.: DNAL 4

AM34P).

0081
Quinoa--composition, nutritional value, food applications.
LBWTA. Coulter, L. ; Lorenz, K. London : Academic Press. Lebensmittel - Wissenschaft + Technologie = Food science + technology. 1990. v. 23 (3). p. 203-207. ill. Includes references. (NAL Call No.: DNAL TP368.L4).

0082
Quinoa (Chenopodium quinoa): high fiber, high protein grain 1970-86.
Rafats, J. Beltsville, Md. : The Library. Quick bibliography series - National Agricultural Library (U.S.). Bibliography. Mar 1986. (86-42). 6 p. (NAL Call No.: DNAL aZ5071.N3).

0083
Regulation of voluntary intake of ryegrass and sorghum forages in cattle by indigestible neutral detergent fiber.
JANSAG. Lippke, H. Champaign, Ill. : American Society of Animal Science. Journal of animal science. Nov 1986. v. 63 (5). p. 1459-1468. Includes references. (NAL Call No.: DNAL 49 J82).

0084
Research on sorghum and wheat flour composites.
Gomez, M.I. ; Mutambenengwe, M.~Moyo, H. Harare, Zimbabwe : UZ/MSU Food Secur Proj, Dep of Agric Econ and Ext, Univ of Zimbabwe, 1987 . Food security for southern Africa / edited by Mandivamba Rukuni and Carl K. Eicher. Paper presented at the Second Annual Conference on Food Security Research in Southern Africa, November 9-13, 1986, Harare, Zimbabwe. p. 341-350. Includes references. (NAL Call No.: DNAL HD9017.A356F66).

0085
Socio-economic influence on the use of sorghum products and nutritional status of children in Sudan.
NURIB. Dundas, M.L. ; Futrell, M.F. Los Altos, Calif. : Geron-X, Inc. Nutrition reports international. May 1986. v. 33 (5). p. 793-802. charts. Includes 12 references. (NAL Call No.: DNAL RC620.A1N8).
Extract: During September 1983 through March 1984 a study of food consumption and dietary practices of families and anthropometric measurements of children in three rural villages in Sudan revealed that all of the children living in UmSagata as determined by weight for age data were malnourished. Stunting was more prevalent among children in Nuba and Oliab than UmSagata and wasting was more prevalent among children in UmSagata. Weight for age data indicated that the percentage of children with first degree and second degree malnutrition increased with increasing age in all villages and that the percentage of female children in second degree malnutrition was greater than male children in the three villages. The amino acid content of a mixture of 100 g sorghum flour and 50 g lentils from Sudan was determined. The chemical score was calculated and the lowest percentage was for methionine + cystine, however, the score was 89 per cent. Therefore, this mixture provided 25 g protein and meets the amino acid requirements for a child.(author)

0086
Socioeconomic and cultural factors influencing nutritional status of children in three Sudanese villages.
JNUEB. Dundas, M.L. ; Futrell, M.F. Philadelphia, Pa. : George F. Stickley Company. Journal of nutrition education. Apr 1987. v. 19 (2). p. 49-54. charts. Includes 12 references. (NAL Call No.: DNAL FNC TX341.J6).
Abstract: A study involving anthropometric measurements and a questionnaire containing both open-ended and closed-choice questions surveyed households in 3 Sudanese villages to identify socioeconomic and cultural factors affecting food consumption patterns, the extent of malnutrition, and the nutritional status of children. Data are presented for each village concerning the types and frequency of foods consumed (the staple dietary food being whole-grain sorghum), and for maternal attitudes concerning the types of foods perceived to be good or bad for infants. Experiences of child death before 5 years of age ranged from 40-47% of 90 mothers interviewed. Insufficient family income adversely affected food consumption and family health. Child malnourishment to some degree ranged in incidence up to 95%, with first-degree malnutrition incidence ranging from 22-57%, depending on the village.(wz)

0087
Sorghum--present status and future potential.
OUAGA. House, L.R. Oxford : Pergamon Press. Outlook on agriculture. 1987. v. 16 (1). p. 21-27. ill. Includes references. (NAL Call No.: DNAL 10 OU8).

0088
Sorghum and food security in southern Africa: present and future research priorities of technical scientists.
House, L.R. Harare, Zimbabwe : UZ/MSU Food Secur Proj, Dep of Agric Econ and Ext, Univ of Zimbabwe, 1987 . Food security for southern Africa / edited by Mandivamba Rukuni and Carl K. Eicher. Paper presented at the Second Annual Conference on Food Security Research in Southern Africa, November 9-13, 1986, Harare, Zimbabwe. p. 329-340. (NAL Call No.: DNAL HD9017.A356F66).

0089
Sorghum and household food security in low rainfall areas of Zimbabwe: a research proposal.
Mbwanda, C.B. Harare, Zimbabwe : UZ/MSU Food Secur Proj, Dep of Agric Econ and Ext, Univ of Zimbabwe, 1987 . Food security for southern Africa / edited by Mandivamba Rukuni and Carl K. Eicher. Paper presented at the Second Annual Conference on Food Security Research in Southern Africa, November 9-13, 1986,

Harare, Zimbabwe. p. 351-359. Includes references. (NAL Call No.: DNAL HD9017.A356F66).

0090
Sorghum beer and related fermentations of Southern Africa.
Novellie, L. Bronx, N.Y. : New York Botanical Garden. Mycological memoir. In the series analytic: Indigenous fermented food of non-western origin / edited by C.W. Hesseltine and H.L. Wang. 1986. (11). p. 219-235. Includes references. (NAL Call No.: DNAL QK600.M8).

0091
Sorghum in a mixed diet for preschool children. I. Good acceptability with and without simple reduction of dietary bulk.
Svanberg, U.S.O. ; Fredrikzon, B.~Gebre-Hiwot, B.~Taddesse, W.W. Oxford : Oxford University Press. Journal of tropical pediatrics. Aug 1987. v. 33 (4). p. 181-185. charts. Includes 17 references. (NAL Call No.: DNAL RJ1.J6).
Abstract: A study assessed the palatability and acceptability of a sorghum-based Ethiopian weaning food, Faffa, in young Ethiopian children (ages 2-5 years). This food was well-accepted when given as porridge, bread, or pancake mixed with the traditional diet to represent ca. 50% of their daily protein intake. While the children consumed less energy-rich, bulk-reduced Faffa porridge (made by adding porridge from malted sorghum to regular Faffa porridge) than regular Faffa porridge, the daily energy intakes from both porridges was similar.(wz)

0092
Spatial and seasonal price differences: a case study of sorghum producers in Sudan.
Idris, B. ; Larson, D.W. Barking, Essex : Elsevier Applied Science. Agricultural administration and extension. 1988. v. 30 (3). p. 177-186. Includes references. (NAL Call No.: DNAL S3.A32).

0093
Staff of life.
Leonard, T. Emmaus, Pa. : Rodale Press, Inc. Organic gardening. Dec 1988. v. 35 (12). p. 46-52. ill. (NAL Call No.: DNAL S605.5.074).

0094
Thermal decomposition of the food colours amaranth, sunset yellow FCF and tartrazine in the presence of sucrose and glucose.
Lancaster, F.E. ; Lawrence, J.F. London : Taylor & Francis. Food additives and contaminants : analysis, surveillance, evaluation, control. Oct/Dec 1986. v. 3 (4). p. 295-303. ill., charts. Includes 13 references. (NAL Call No.: DNAL TX553.A3F65).
Abstract: An analytical study assessed the thermal decomposition of the 3 color additives most widely used in candy-making (monoazo-colors amaranth, sunset yellow FCF, and tartrazine), using candies made at various temperatures with mixtures of sucrose, glucose, and the colors. Analyses, conducted using high-performance liquid chromatography, revealed that: (1) all 3 colors can decompose, yielding naphthionic/sulfanilic acids and amino derivatives; and (2) that different levels of the colors remained in the finished candies due to different derees of degradation during candy heating. Chromatographic data are presented. Canadian guidelines on permissible color content also are discussed.

0095
Thermal decomposition of the food colours amaranth, sunset yellow FCF and tartrazine in the presence of sucrose and glucose.
Lancaster, F.E. ; Lawrence, J.F. London : Taylor & Francis. Food additives and contaminants. Oct/Dec 1986. v. 3 (4). p. 295-303. Includes references. (NAL Call No.: DNAL TX553.A3F65).

0096
Thin porridges (atoles) prepared from maize and sorghum.
CECHAF. Vivas, N.E. ; Waniska, R.D.~Rooney, L.W. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Nov/Dec 1987. v. 64 (6). p. 390-394. Includes references. (NAL Call No.: DNAL 59.8 C33).

0097
The total dietary fiber content of wheat, corn, barley, sorghum, and distillers' dried grains with solubles.
CECHAF. San Buenaventura, M.L. ; Dong, F.M.~Rasco, B.A. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Mar 1987. v. 64 (2). p. 135-136. Includes references. (NAL Call No.: DNAL 59.8 C33).

0098
Total lipids of sorghum grain.
JAFCAU. Osagie, A.U. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1987. v. 35 (4). p. 601-604. Includes references. (NAL Call No.: DNAL 381 J8223).

0099
Traditional foods from sorghum: their production, evaluation, and nutritional value.
ACSTD. Rooney, L.W. ; Kirleis, A.W.~Murty, D.S. St. Paul, Minn. : American Association of Cereal Chemists. Advances in cereal science and technology. Literature review. 1986. v. 8. p. 317-353. ill. Includes references. (NAL Call No.: DNAL TS2120.A3).

0100
Trans-cis isomerisation of carotenes and its effect on the vitamin A potency of some common Indonesian foods.
NURIB. Pol, F. van der. ; Purnomo, S.U.~Rosmalen, H.A. van. Stoneham, Mass. : Butterworth Publishers. Nutrition reports international. Apr 1988. v. 37 (4). p. 785-793. ill., charts. Includes 6 references. (NAL Call No.: DNAL RC620.A1N8)

Extract: The presence of cis-isomers of beta-carotene in four green leafy vegetables, waterspinach (Ipomoea aquatica), amaranth (Amaranthus cruentus), jointfir (Gnetum gnemon) and cassava leaf (Manihot utilissima) and in sweet potatoes (Ipomoea batates) was examined before and after traditional Indonesian ways of cooking. The vitamin A potency of the beta-carotene fraction was found to be reduced by 2 to 12% as a result of the presence of cis-isomers of beta-carotene in vegetables purchased on the markets in Surabaya. Isomerisation during traditional cooking caused an additional loss of up to 9%. Taking into account some analytical effects, multiplying contents obtained from single total beta-carotene and alpha-carotene determinations by 0.9 will correct in most cases adequately for the presence of cis-isomers.(author)

0101
The use and characteristics of sorghum for human food.
Rooney, L.W. ; Miller, F.R.~Rosenow, D.T. Washington, D.C. : The Conference. Report of annual Corn and Sorghum Research Conference. 1987. (42). p. 31-47. Includes references. (NAL Call No.: DNAL 59.9 AM32).

0102
Variation in grain size within hybrid sorghum cultivars.
Ali, M.R. ; Wills, R.B.H. Kuala Lumpur : Asean Food Handling Bureau. Asean food journal. Mar 1986. v. 2 (1). p. 40-41. Includes references. (NAL Call No.: DNAL TX341.A74).

0103
Within-row spacing influences on diverse sorghum genotypes. II. Dry matter yield and forage quality.
AGJOAT. Caravetta, G.J. ; Cherney, J.H.~Johnson, K.D. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1990. v. 82 (2). p. 210-215. Includes references. (NAL Call No.: DNAL 4 AM34P).
Research was conducted to determine changes in dry matter yield, cell wall composition, and digestibility of four diverse sorghum Sorghum bicolor (L.) Moench. genotypes as influenced by within-row spacing. Genotypes (IS-0469, IS-0865, P-954063, and IS-2952) were selected to represent a range in morphology and cell wall composition, and were sown at five within-row spacings of 5, 10, 15, 30, and 60 cm at two field locations in 1986 and 1987. Harvested herbage was separated into stem, leaf sheath, and leaf blade components for main-shoot and tillers. Forage dry matter yield declined linearly from 10.9 to 8.1 Mg ha-1 as within-row spacing increased from 5 to 60 cm. Total forage neutral detergent fiber and permanganate lignin concentrations declined linearly from 717 to 700 g kg-1 and 79.5 to 71.5 g kg-1, respectively, as within-row spacing increased from 5 to 60 cm. Main-shoot permanganate lignin concentration in the stem component declined 15.3%, while leaf sheath and leaf blade components were relatively unchanged in lignin concentration with increased within-row spacing. Total forage in vitro dry matter digestibility and N content increased 8.7 and 16.1%, respectively, as within-row spacing increased. Reduced plant populations, through increased within-row spacing, improved forage quality and increased digestibility and protein content, however, dry matter yield was significantly reduced. Within-row spacing may significantly influence genotype selection for dry matter yield. Genotypic selection for improved forage quality in a breeding nursery should not be greatly affected by within-row plant spacings of 15 cm or less.

0104
Zinc absorption in humans from meals based on rye, barley, oatmeal, tritical and whole wheat.
JONUA. Sandstrom, B. ; Almgren, A.~Kivisto, B.~Cederblad, A. Bethesda, Md. : American Institute of Nutrition. The Journal of nutrition. Nov 1987. v. 117 (11). p. 1899-1902. charts. Includes references. (NAL Call No.: DNAL 389.8 J82).
Abstract: A human nutrition study assessed the absorption of zinc (Zn) from meals containing rye, barley, oatmeal, triticale, and whole wheat extrinsically labeled with Zn-65 to evaluate Zn uptake losses due to Zn-fiber (phytate) interactions. Zn absorption decreased with increasing phytate levels in the meal, with lowest absorption from meals containing oatmeal and highest absorption from meals containing rye. The results confirm that Zn absorption decreases with increasing dietary phytate.

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